Notice of Allowability	Application No. 09/685,403	Applicant(s) BEETHAM ET AL.
	Examiner David H Kruse	Art Unit 1638

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *the Response filed 8 September 2003*.
2. ☒ The allowed claim(s) is/are *14-18, 20-23 and 25-28, renumbered 1-13*.
3. ☒ The drawings filed on *08 September 2003* are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☐ All b) ☐ Some* c) ☐ None of the:
      1. ☐ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
      3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.
5. ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
   (a) ☐ The translation of the foreign language provisional application has been received.
6. ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application. **THIS THREE-MONTH PERIOD IS NOT EXTENDABLE**

7. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
8. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      1) ☐ hereto or 2) ☐ to Paper No. ____.
   (b) ☐ including changes required by the proposed drawing correction filed _____, which has been approved by the Examiner.
   (c) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No. _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the margin according to 37 CFR 1.121(d).

9. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1☐ Notice of References Cited (PTO-892)
2☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No. _____
4☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5☐ Notice of Informal Patent Application (PTO-152)
6☒ Interview Summary (PTO-413), Paper No. *12/03* .
7☒ Examiner's Amendment/Comment
8☐ Examiner's Statement of Reasons for Allowance
9☐ Other .

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR § 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with John M. Sanders on 10 December 2003.

The application has been amended as follows:

Claim 14 (currently amended) A method for producing a non-transgenic, herbicide resistant or tolerant plant comprising:

(a)[a.] introducing into [a plant cell] plant cells a recombinagenic oligonucleobase with a targeted mutation in the EPSPS gene to produce plant cells with a mutant EPSPS gene that expresses an EPSPS protein that is mutated at one or more amino acid positions, said positions selected from the group consisting of Leu_{173}[;], Ala_{179}, Met_{180}, Arg_{181}, Ser_{98}, Ser_{255} and Leu_{198} in the *Arabidopsis* EPSPS protein or at an analogous amino acid residue in an EPSPS paralog;

(b)[b.] identifying a plant cell having[, a mutated EPSPS gene, which cell has] substantially normal growth as compared to a corresponding wild-type plant cell in the presence of glyphosate; and

(c)[c.] regenerating a non-transgenic herbicide resistant or tolerant plant having a mutated EPSPS gene from said plant cell.

Claim 15 (currently amended) A method for producing a non-transgenic, herbicide resistant or tolerant plant comprising:

(a)[a.] introducing into [a plant cell] plant cells a recombinagenic oligonucleobase with a targeted mutation in the EPSPS gene to produce plant cells with a mutant EPSPS gene that expresses [an] a mutant EPSPS protein that is mutated at one or more amino acid positions, said positions selected from the group consisting of Leu_{173}[;], Ala_{179}, Met_{180}, Arg_{181}, Ser_{98}, Ser_{255} and Leu_{198} in the *Arabidopsis* EPSPS protein or at an analogous amino acid residue in an EPSPS paralog;

(b)[b.] identifying a plant cell having a [mutated EPSPS gene, which encoded] mutant EPSPS protein that has substantially the same catalytic activity as compared to a corresponding wild type EPSPS protein in the presence of glyphosate; and

(c)[c.] regenerating a non-transgenic herbicide resistant or tolerant plant having a mutated EPSPS gene from said plant cell.

Claim 20 (currently amended) The method according to claim 14 in which the amino acid positions [in the *Zea mays* paralog] are selected from the group consisting of Leu_{97}, Ala_{103}, Met_{104}, Arg_{105}, Ser_{23}, Ser_{179}[,] and Leu_{122} in the *Zea mays* paralog.

Claim 21 (currently amended) The method according to claim 14 in which the amino acid positions [in the *Brassica napus* paralog] are selected from the group consisting of Leu_{169}, Ala_{175}, Met_{176}, Arg_{177}, Ser_{94}, Ser_{251} and Leu_{194} in a *Brassica sp* paralog.

Claim 22 (currently amended) The method according to claim 14 in which the amino acid positions [in the *Petunia hybrida*] are selected from the group consisting of Leu_{169}, Ala_{175}, Met_{176}, Arg_{177}, Ser_{94}, Ser_{251} and Leu_{194} in the *Petunia hybrida* paralog.

At claim 23, line 1, "plant is" has been amended to -- plant cells are -- to be in agreement with claims 14 and 15.

Claim 25 (currently amended) The method according to claim 15 in which the amino acid positions [in the *Zea mays* paralog] are selected from the group consisting of Leu_{97}, Ala_{103}, Met_{104}, Arg_{105}, Ser_{23}, Ser_{179}[,] and Leu_{122} in the *Zea mays* paralog.

Claim 26 (currently amended) The method according to claim 15 in which the amino acid positions [in the *Brassica napus* paralog] are selected from the group consisting of Leu_{169}, Ala_{175}, Met_{176}, Arg_{177}, Ser_{94}, Ser_{251} and Leu_{194} in a *Brassica sp* paralog.

Claim 27 (currently amended) The method according to claim 15 in which the amino acid positions [in the *Petunia hybrida*] are selected from the group consisting of Leu_{169}, Ala_{175}, Met_{176}, Arg_{177}, Ser_{94}, Ser_{251} and Leu_{194} in the *Petunia hybrida* paralog.

Claim 28 (currently amended) A method for producing a non-transgenic, herbicide resistant or tolerant plant comprising:

(a)[a.] introducing into [a plant cell] plant cells a recombinagenic oligonucleobase with a targeted mutation in the EPSPS gene to produce plant cells with a mutant EPSPS gene that expresses an EPSPS protein that is mutated in two amino acid positions, said positions selected from the group consisting of Thr_{178} and Pro_{182}, in the *Arabidopsis* EPSPS protein or at an analogous amino acid residue in an EPSPS paralog wherein the Thr_{178} is changed to Val or Leu and Pro_{182} is changed to Ser;

(b)[b.] identifying a plant cell having[, a mutated EPSPS gene, which cell has] substantially normal growth as compared to a corresponding wild-type plant cell in the presence of glyphosate; and

(c)[c.] regenerating a non-transgenic herbicide resistant or tolerant plant having a mutated EPSPS gene from said plant cell.

Claim 29 (new) The method according to claim 28 in which the amino acid positions are Thr_{102} and Pro_{106} in the *Zea mays* paralog.

Claim 30 (new) The method according to claim 28 in which the amino acid positions are Thr_{174} and Pro_{178} in a *Brassica sp* paralog.

Claim 31 (new) The method according to claim 28 in which the amino acid positions are Thr_{174} and Pro_{178} in the *Petunia hybrida* paralog.

The title of the invention has been amended to read:

METHODS OF MAKING NON-TRANSGNEIC HERBICIDE RESISTANT PLANTS

In the Abstract at lines 10-13, "The present invention also relates to a non-transgenic plant cell...EPSPS gene." has been deleted.

2. Any inquiry concerning this communication or earlier communications from the examiner should be directed to David H. Kruse, Ph.D. whose telephone number is (703) 306-4539, **(571) 272-0799 after 6 January 2004**. The examiner can normally be reached on Monday to Friday from 8:00 a.m. to 4:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dr. Amy Nelson can be reached at (703) 306-3218, **(571) 272-0804 after 6 January 2004**. The fax telephone number for this Group is (703) 872-9306 Before Final or (703) 872-9307 After Final.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group Receptionist whose telephone number is (703) 308-0196.

DAVID T. FOX
PRIMARY EXAMINER
GROUP ~~180~~ 1638

David H. Kruse, Ph.D.
8 December 2003